NEW FLYER

INSTRUCTION TO SERVICE

ITS: 5124	
SECTION:	549 HVAC
WRITTEN BY:	Kevin Robinson
SUBJECT:	Remove and replace copper lines at the booster pump

ITS5124

Complete this ITS for SR1507, SR1559, SR1575 and SR1576 ONLY.

PROCEDURE:

1. Turn the main battery disconnect switch to the “OFF” position.
2. Access the tubes at the booster pump.
3. Isolate the coolant lines at the engine and booster pump from the rest of the bus by shutting the valve at the lower radiator tube as well as the valve downstream from the auxiliary heater.
4. Place a drain pan beneath the booster pump.
5. Disconnect the inlet and discharge lines from the booster pump by loosening the gear clamps at the booster pump. Retain gear clamps for re-use.
6. Remove the copper tube assembly, silicone hoses and copper elbow connecting the booster pump to the engine.
    a. Loosen the gear clamp securing the copper tube assembly to the silicone elbow at the auxiliary heater. Keep the elbow and gear clamps for re-use.
    b. Loosen the gear clamp securing the silicone hose to the engine block. Discard the gear clamp.
    c. Remove the tube clamps securing the tube assembly to the bus. Discard the clamps, cover plates and hardware.
    d. Remove copper tube assembly, silicone hoses and copper elbow assembly and discard it.
7. Remove the existing clamp support bracket by removing the two screws securing it. Discard the hardware.
8. Place the supplied clamp support bracket (NF PN 484987) in the location shown in Figure 1 and secure it in place with two 1/4 inch self tapping screws.(NF PN 34S04012) and two flat washers (NF PN 10W04000).
9. Remove the clamp plate from the tube clamp that supports the vertical tube from the under floor heater lines on the street side of the bus and replace it with the new supplied clamp plate (NF PN 482984). Secure the new plate with the hardware removed from the old one but replace the two nuts with new ones (NF PN 40N04000).
10. Remove the 90 degree adapter from the Cummins block and replace it with the new larger supplied copper elbow (NF PN 6409017).
11. Secure the new inlet tube assembly (NF PN 485156) to the bus using the two supplied clamps (NF PN 068060) bolted to the two new clamp brackets, installed in previous steps. Secure the clamps with two ¼-20 x 2.0 inch bolts (NF PN 10B04032) each and use the supplied clamp cover plates (NF PN 068497). The clamp at the under floor heater lines will also require two lock nuts which are supplied (NF PN 40N04000). Leave the bolts loose for now to allow for adjustments once all components are attached.

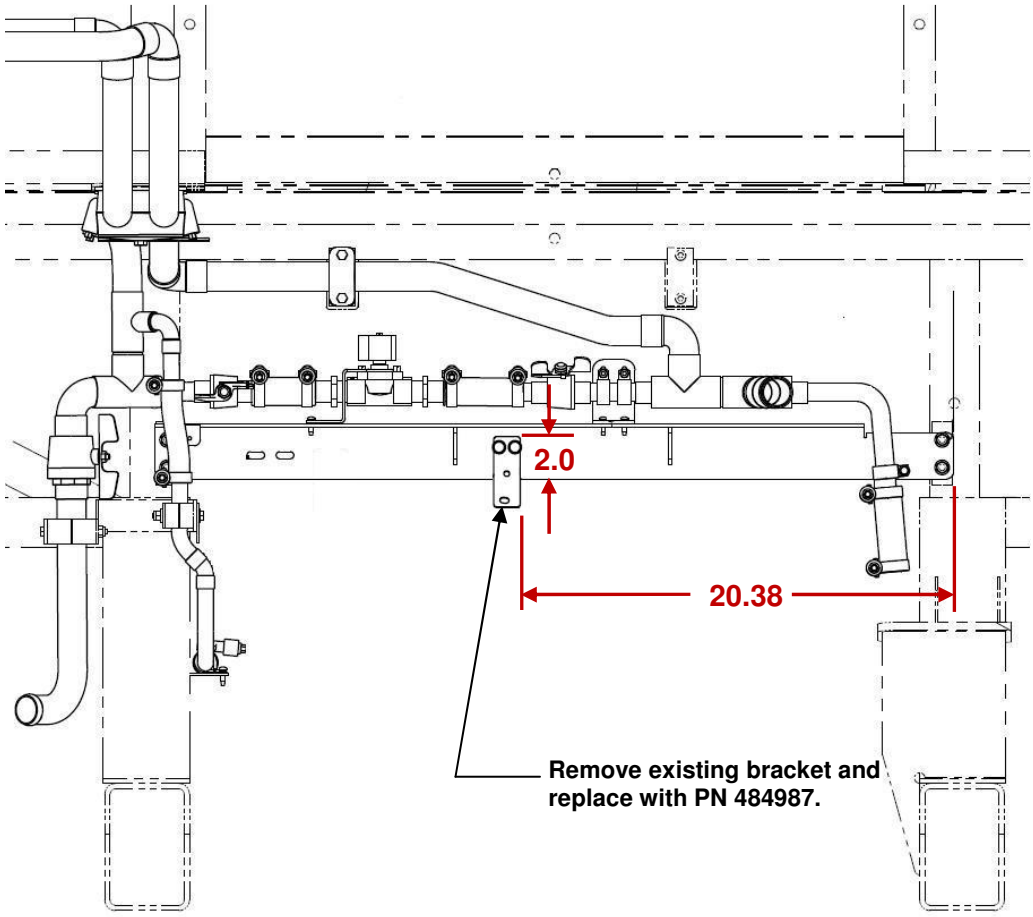


Figure 1 – Clamp Plates (Aux heater and engine removed for clarity)

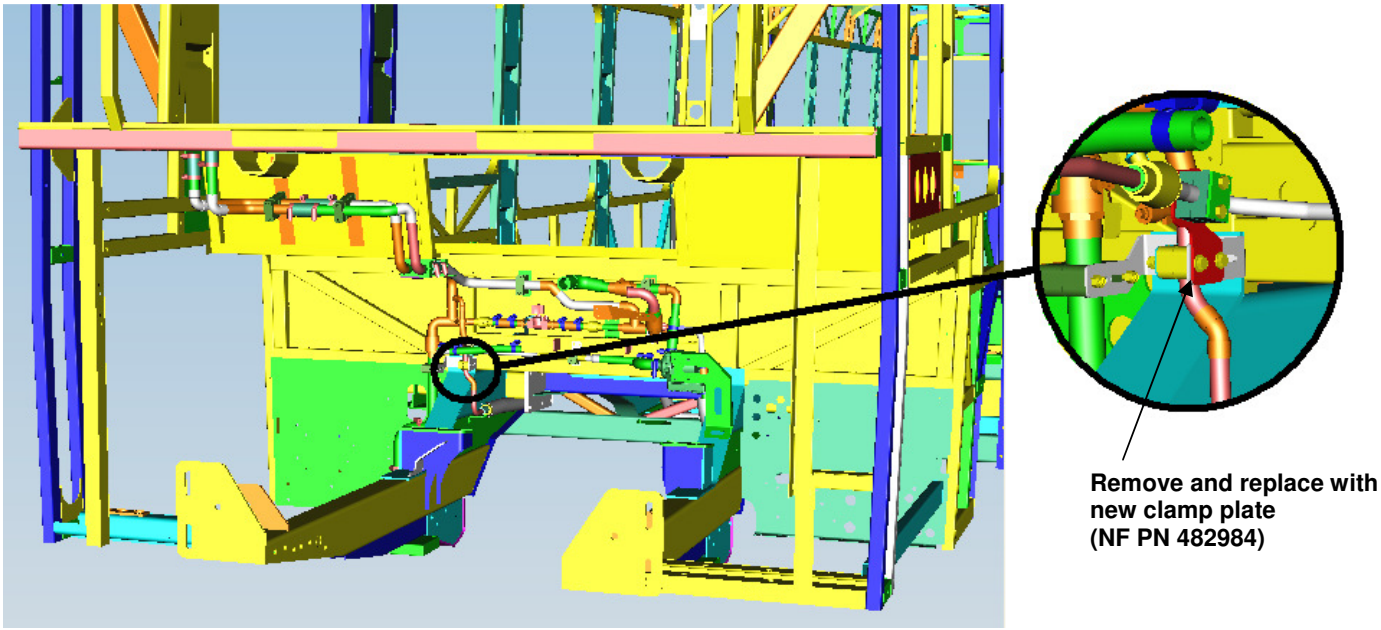


Figure 2: Clamp Plate Swap Out

12. Secure the new copper tube assembly to the CAC support bracket using the supplied tube clamp (NF PN 068060), two ¼-20 x 2.5 inch bolts (NF PN 10B04040), clamp plate (NF PN 068497) and two ¼-20 nylon lock nuts (NF PN 40N04000). Leave the bolts loose for now to allow for adjustments once all components are attached.

☞ **NOTE: Review clamp location on the CAC support bracket. As required ream or drill out the existing holes so that the supplied tube clamp (NF PN 068060) can be secured without stressing the new copper tube assembly**

13. Attach the new inlet tube assembly to the booster pump using the 90 degree elbow and two gear clamps removed in previous steps. Leave the clamps loose for now to allow for adjustments once all components are attached.
14. Attach the new supplied copper 90 degree elbow (NF PN 482994) between the new engine fitting and the new copper tube assembly, installed in previous steps
    a. Secure the elbow to the engine with one length of 0.75 ID silicone hose (NF PN 260695), cut to fit, and two existing gear clamps. Leave the clamps loose for now to allow for adjustments once all components are attached.
    b. Secure the elbow to the new copper inlet tube assembly with one length of 1.13 ID silicone hose (NF PN 260698), cut to fit, and two supplied gear clamps (NF PN 274971). Leave the clamps loose for now to allow for adjustments once all components are attached.
15. Adjust the system for proper fitment and tighten:
    a. The three pipe clamps, installed to secure the new inlet tube assembly.
    b. The gear clamps at the auxiliary heater silicone elbow, securing the new tube assembly. Torque the gear clamps 30-70 in-lbs.
    c. The four gear clamps near the engine, securing the new copper elbow assembly. Torque the four gear clamps 30-70 in-lbs.
16. Remove all tools and debris and return the bus to service condition.
17. Open all valves closed in previous steps.
18. Review the new installation and if any leaks are noted, repair as required.
19. If necessary, lower coach in accordance with the New Flyer Service Manual.
20. Turn the main battery disconnect switch to the “ON” position.
21. Reprogram the booster pump following the steps laid out in Appendix A - WP29 Reprogram Instructions.
22. Fill the system with coolant and de-aerate. Refer to the maintenance manual for de-aeration instructions.

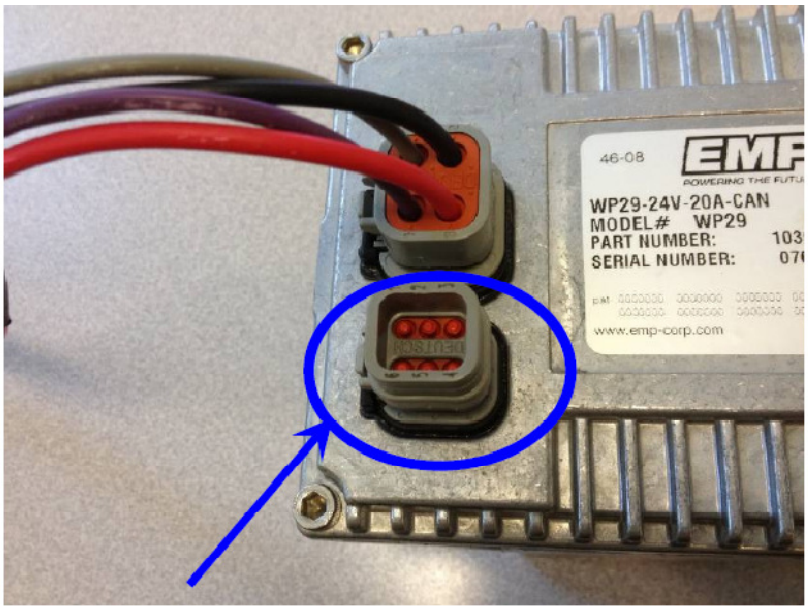
Appendix A

WP29 Reprogram Instructions

WP29 Reprogram Procedure (Seattle D60LF)

Materials Required:
EMPower Connect Software on Laptop with Programmer Level License
Communication Kit 7500038001, (WP29-EMP TTL-USB)
Software Labels, P/N 1030002229PA35
Software, Calibration File, S0005-00101-001

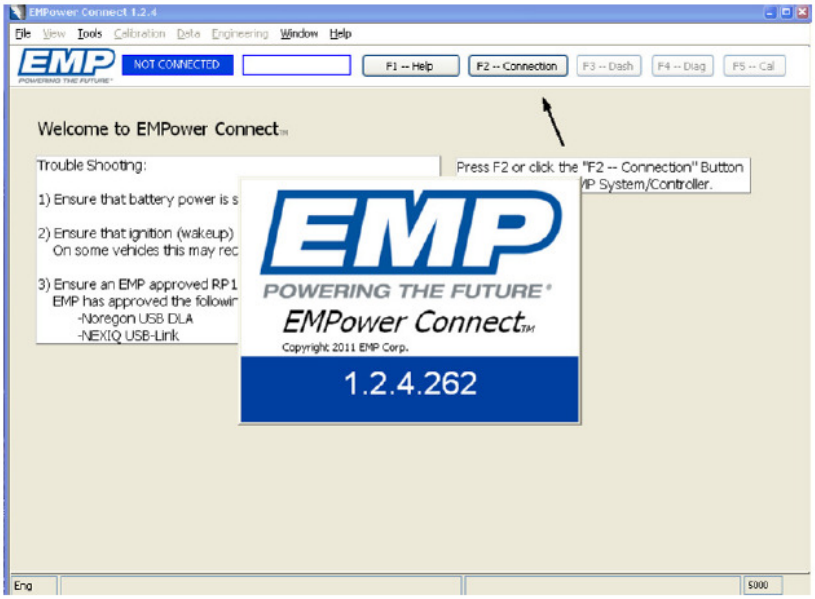
REPROGRAM PROCEDURE
Connect to the pump with cable 3180001079 through the Duetsch small 6 pin connector



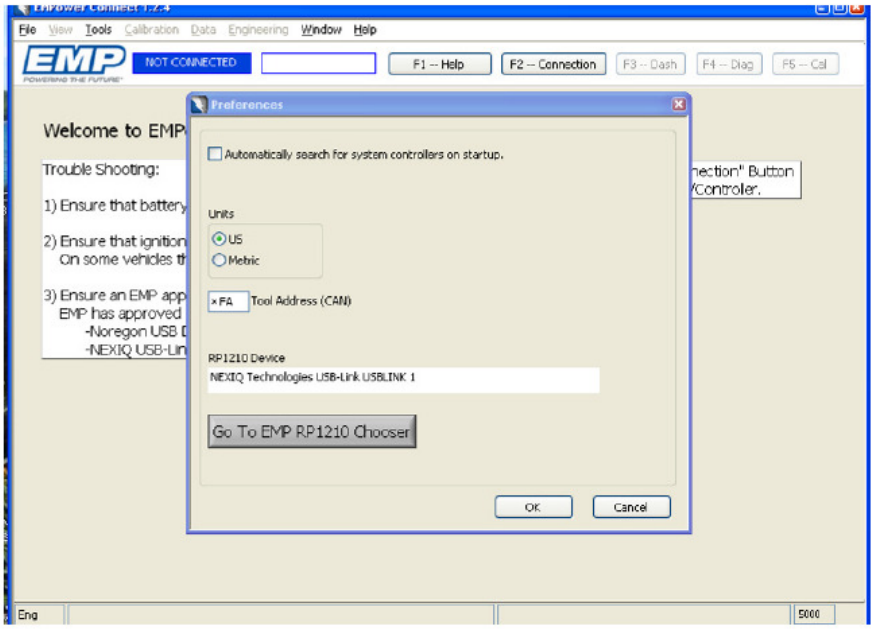
Remove the plug, Connect the harness to the Deutsch connector

Connect the EMP TTL Converter to the communication cable and plug into the USB port of the computer.

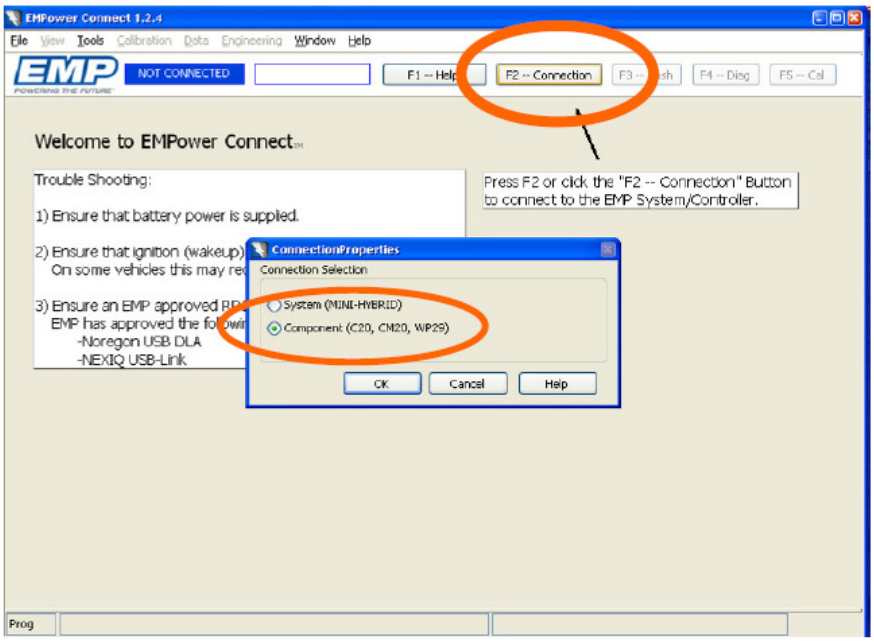
Start the service tool, EMPower Connect



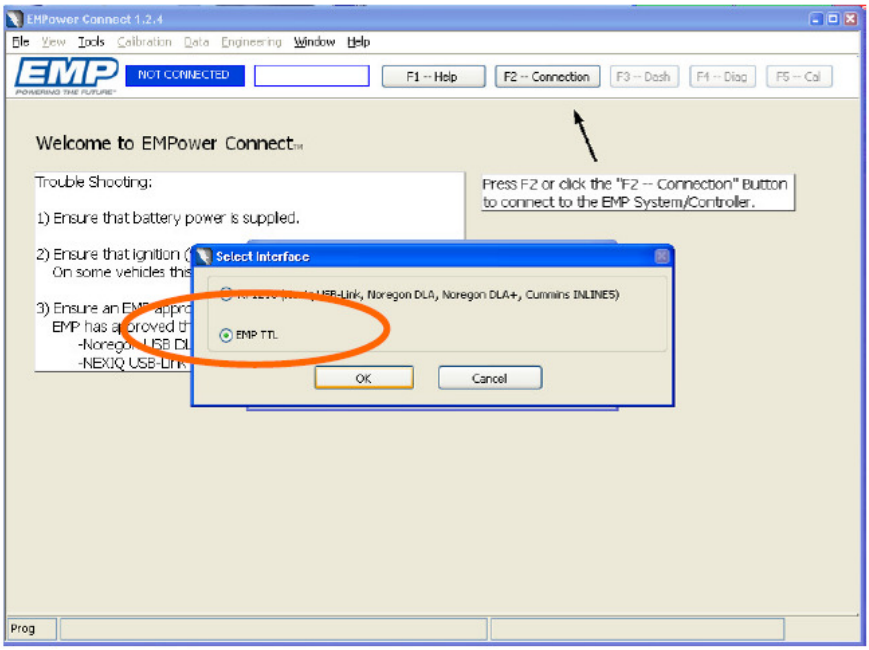
Make sure the Preferences are set to search for components. Under the file tab, select preferences, make sure the top box is not selected, and OK



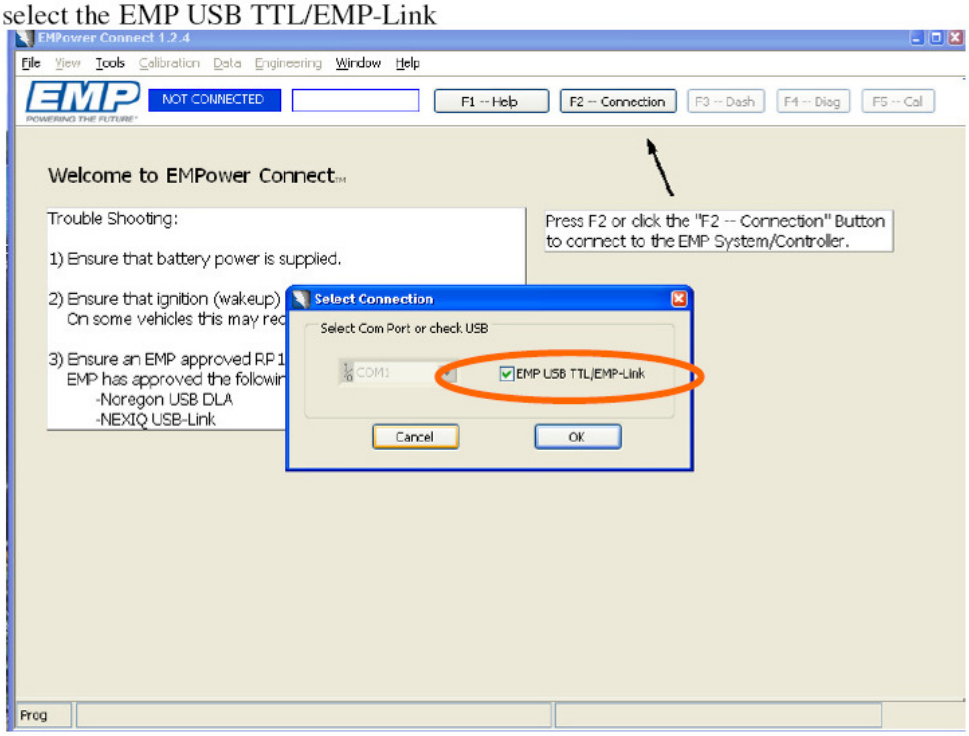
Connect to the pump by selecting the "F2 - Connection" tab. Select the Component (C20, CM20, WP29) in the ConnectionProperties pop-up. At this time, the WP29 pump must be powered. Follow the cooling system fill procedure on the belt guard to initiate pump operation using the switch on the rear run box.



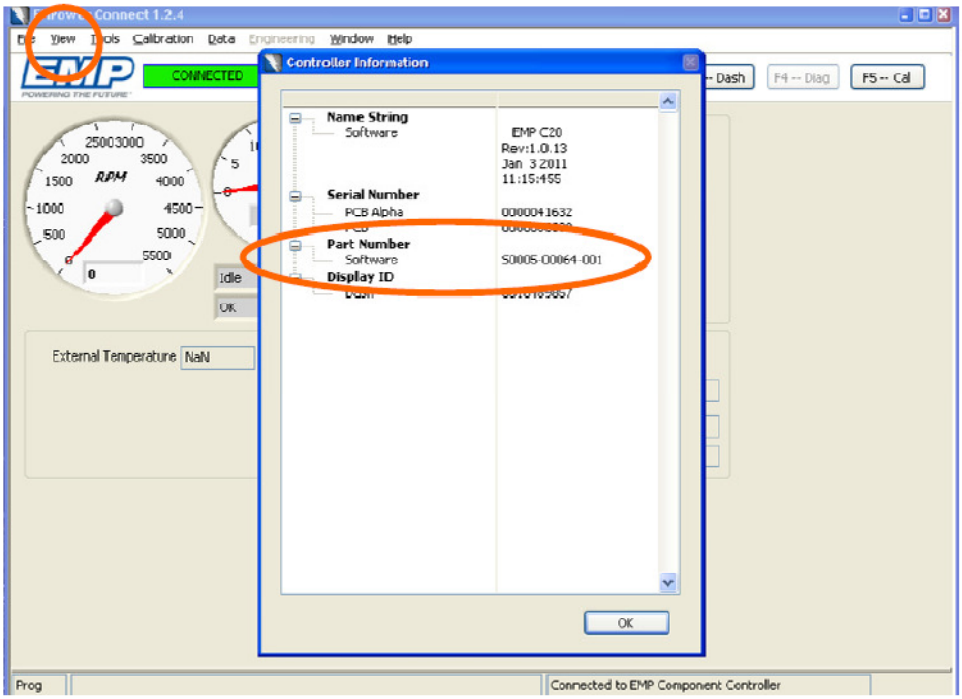
Select the EMP TTL Interface



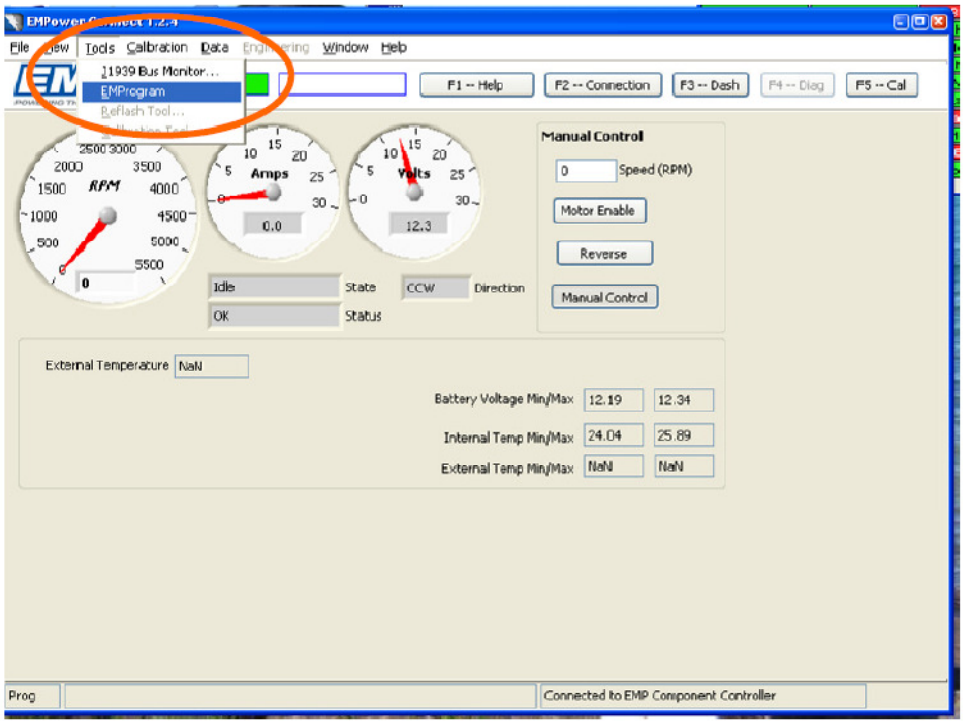
Finally select the EMP USB TTL/EMP-Link



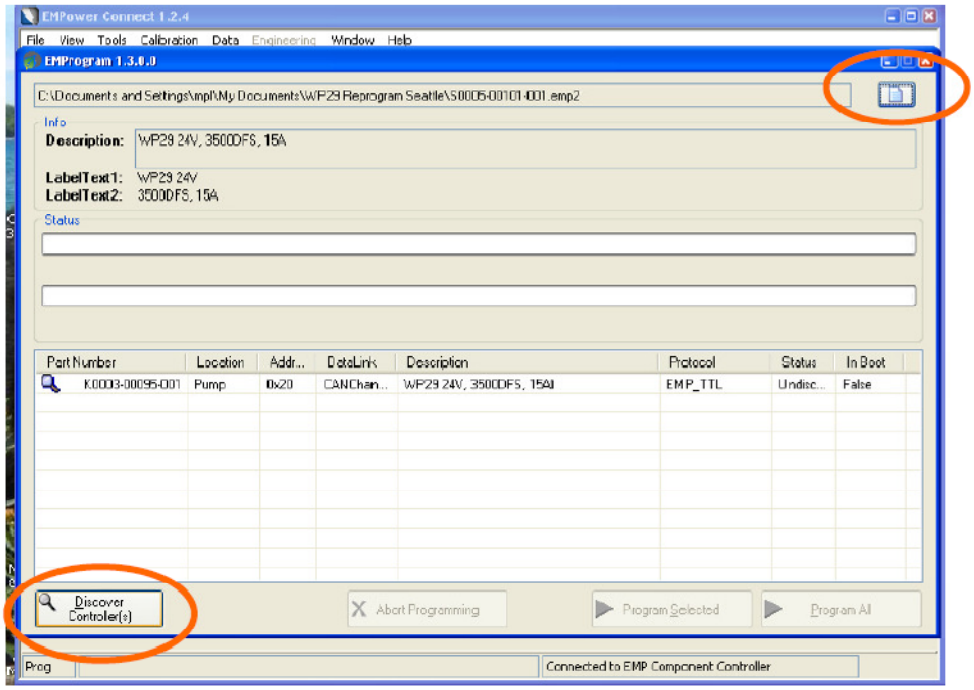
Upon Connection, the component Dashboard will appear. Select View banner and Controller information from the dropdown menu. The pump software part number is displayed and should be S0005-00064-001 upon initial connection. The following steps will load the new 3500 rpm control software.



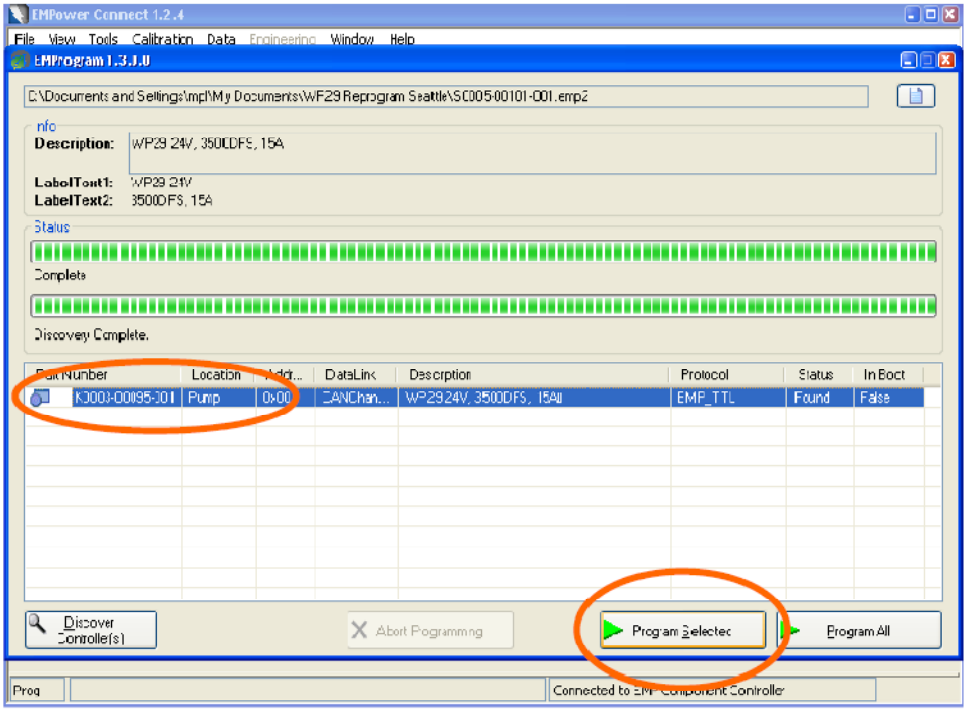
Launch EMProgram from the Tools Menu. A programmer level access is required enable the option.



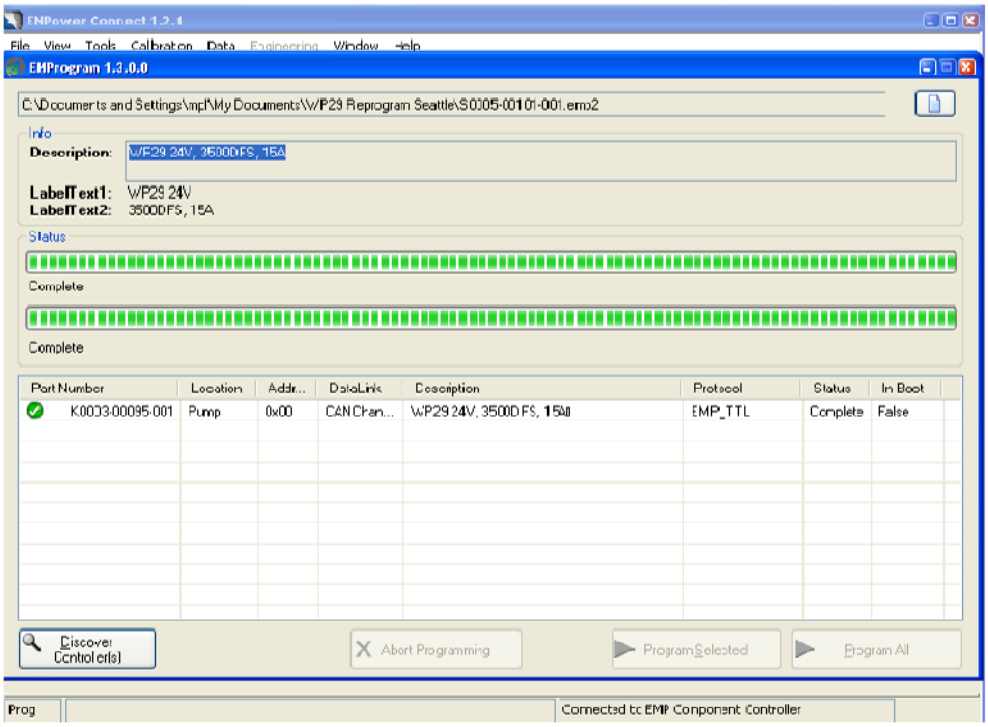
Use the file selection button on the top of the EMProgram window to select the new software, S0005-00101-001.emp2. Software file was provided, and must be accessed from the location the operator saved the file.



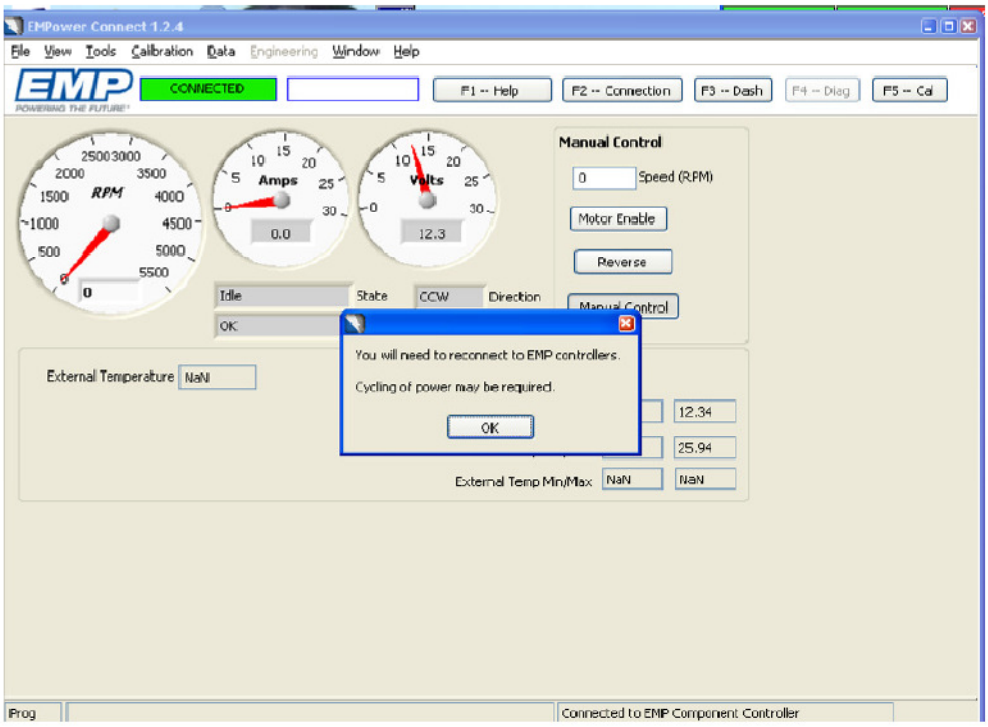
Once the file has been selected, Discover Controller(s) to enable the tool locate controllers for reprogramming.



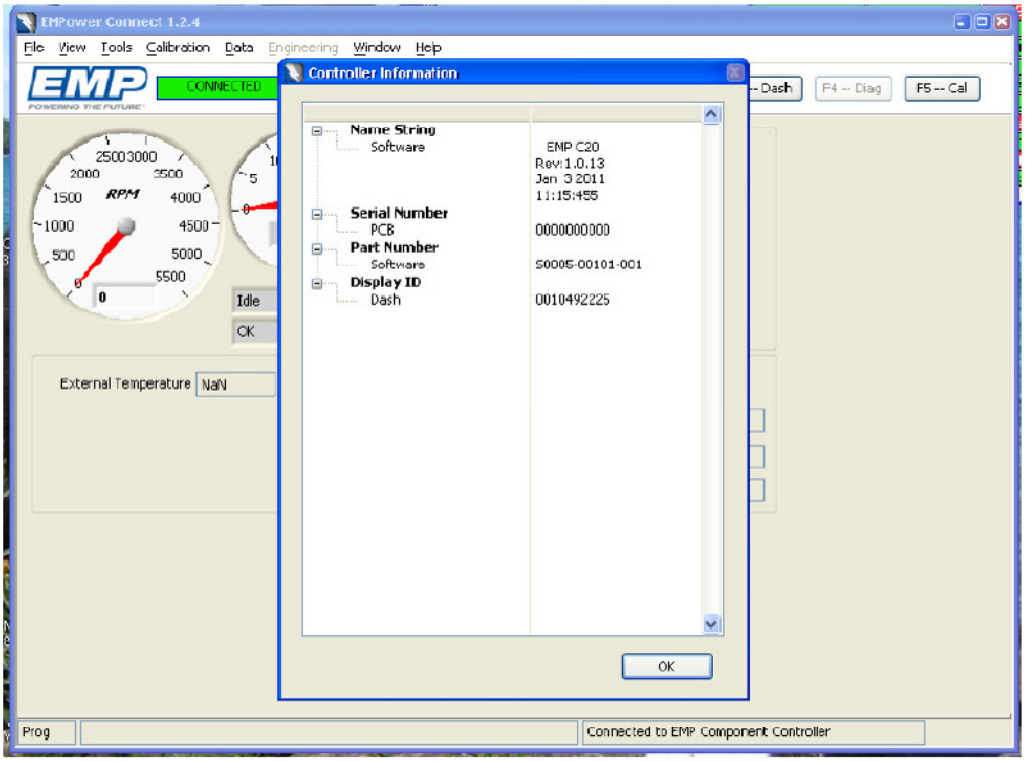
Select the Pump, and press the Program Selected Button. Both Status bars will show complete when the programming has been completed. Close the EMProgram window with the X in the top right corner of the window.



Upon ending EMProgram, the service tool will ask you to reconnect to the controller. Repeat the process to the connect to the controller.

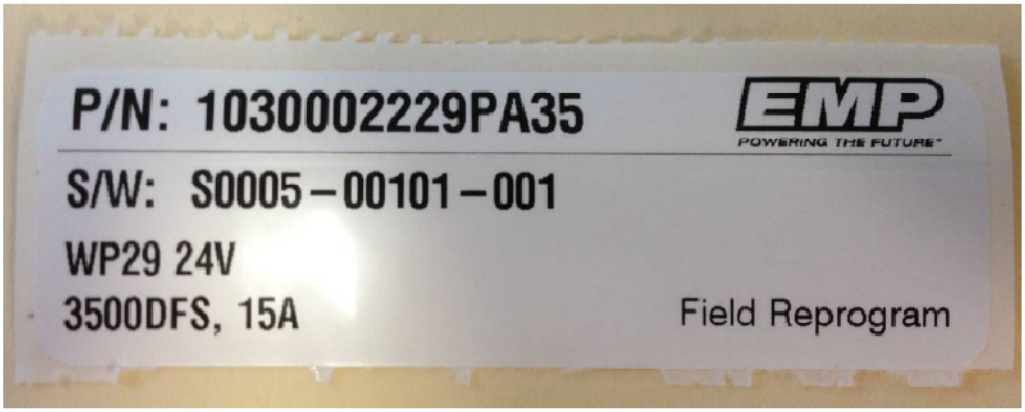


Once connected, View, Controller Information, and verify the new software loaded into the controller.



Unplug harness, and reinstall connection plug on the pump.

Install the new software label on the pump.



NEW FLYER

LABOUR ESTIMATE

	Operation	Men	Hours	Labour Time M X HR
1	Remove and replace copper lines at the booster pump.	1	6.0	6.0

PARTS REQUIRED

Item	Part Number	Description	Qty. per Coach	Units	Notes
1	6409459	KIT BOOSTER PUMP REWORK 3	1	EA	

6409459 – KIT PARTS

Item	Part Number	Description	Qty. per Coach	Units	Notes
1	6409017	ELBOW, 90 DEGREE, COOLANT	1	EA	
2	484987	ASSY-BPUMP LINE SUPPORT	1	EA	
3	34S04012	SCREW TPG-1/4X3/4 LG	2	EA	
4	10W04000	WASHER-FLAT 1/4 NOM	2	EA	
5	482984	BRACKET-CLAMP MTG	1	EA	
6	40N04000	LOCKNUT 1/4" 20 UNC	6	EA	
7	485156	ASSY-1.13 DIA CU	1	EA	
8	10B04032	BOLT HEX 1/4" 20 UNC X 2" LG	4	EA	
9	068497	PLATE CLAMP COVER GR 4	3	EA	
10	068060	CLAMP-1.125 DIA TUBE	3	EA	
11	10B04040	BOLT HEX 1/4" 20 UNC X 2 1/2" LG	2	EA	
12	260695	HOSE - 0.75 ID	0.5	EA	
13	260698	HOSE - 1.125 ID	0.5	EA	
14	482994	ELBOW ASSY-1.13 DIA CU	1	EA	
15	274971	CLAMP-BREEZE .8125-1.75	2	EA	